Intergenerational Persistence of Industry of Employment in India

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Abstract

This paper studies the intergenerational persistence of industry in India. Using data from a nationally representative sample, we find that 62% young Indian men are employed in the same industry where their fathers are also employed. A set of simulations that assign young men randomly across industries is run to study the persistence in counterfactual population. We use a probit model to estimate the effect of education, and a set of family background variables on intergenerational persistence. Higher education is found to be associated with lower persistence. Ownership of productive assets exerts important non-linear effect on intergenerational transmission of industry. We also find substantial evidence of influence of father's network and assortative mating on son's choice of industry.

1. Introduction

Equality of opportunity has a long standing in social science research. It has gained renewed interest in equality of opportunities in labour market[1]. In the context of India, there is a growing concern that, though the economic growth in the last decades has been able to bring down the poverty, there has been differential benefit to different sections of the society (World Bank 2011; Emran and Shilpi 2012). India's economic growth has been accompanied by rising inequality.

In this paper we focus on one dimension of inequality – labour market outcomes across generations. The nature and extent of the relationship between labour market outcomes across generations are important indicators of social mobility and equality of opportunity. Understanding the persistence in labour market outcomes is fundamental to the formulation of public policies that make the society a level playing field for its members.

Economists have looked at the persistence as a channel through which the inequality is transmitted across generations. The interest motivated a literature in labour economics that studied the intergenerational relationship between earnings of parents and adult children[2]. Often intergenerational persistence is characterized in terms of intergenerational earning elasticity. Though important for our understanding of the persistence, intergenerational earning elasticity provides an incomplete picture of the inequality of opportunity (Roemer, 2004). It tells us little about the circumstances that govern the advantages and investment passed from one generation to another. Bowles and Gintis (2002) argue that intergenerational transmission of economic status is affected by a heterogeneous collection of mechanisms like genetic and cultural transmission of cognitive skills, personality traits, belonging to welfare increasing race, superior health and education etc. It's also well understood that family background and public investment play important role in intergenerational persistence by affecting early childhood development. Beyond childhood, parents' network can affect their adult children's labour market outcomes by affecting the access to a particular type of jobs. Understanding the strength of these factors is of paramount importance for the formulation of effective public policy. If the access to jobs is determined by network or nepotism, intervention directed to early years will not be effective in promoting equal opportunity.

Empirical literature on intergenerational persistence or mobility has often focused on developed countries. Only a few studies analyse persistence in developing countries, though much has been written about inequality in such countries[3]. Lack of data that allow meaningful comparison of outcomes of two generations has been the main reason behind this research gap. However, a few recent papers have studied intergeneration mobility using cross-sectional data, either ignoring the possible contamination by transitory states in labour market or using sibling correlation to infer about the role of previous generation in persistence. In the context of India, Hnatkovska et al. (2012), Kumar et al. (2002) and

[1] See Black and Devereux (2010) for a survey of the literature on intergenerational mobility.
[2] See Salon (1999, 2002), Corak (2006).
[3] A few recent studies on inequality in India include Kar and Sakthivel (2007), Joe et al. (2008), and Deaton and Dreze (2002) among others.

Majumder (2010) studied intergenerational mobility in terms of educational and occupational attainment. In these studies and others using Indian data, the focus has been on the comparison between different social groups – castes. In particular, the development deficit of disadvantaged castes in terms of mobility in a period of rapid economic growth received considerable attention. However, they provide little insight on the factors that cause lower mobility or higher persistence in educational and occupational attainment in India. This paper attempts to bridge this research gap.

We study the intergenerational persistence of industry of employment using a nationally representative sample survey data from India. We offer descriptive statistics on the degree to which the industry of employment of father is transmitted to his son. We find that almost 62% of young male Indians work in the industry that employs their fathers. We document the variation in the intergenerational persistence across different educational and social groups. We then perform a set of randomization to construct counterfactual population. The persistence in these counterfactual populations is compared to actual persistence. The gap between observed persistence and that in counterfactual population suggests that random matching is not the determining mechanism behind intergenerational persistence in India. Finally we use econometric tool to estimate the effect of education and family background on the intergenerational persistence of industry of employment. In the econometric model we attempt to study the role of education, family income (proxied by parental education, ownership of productive assets) and father's network (proxied by father's occupational status). We find considerable variation in the effect of these factors on intergenerational persistence in urban and rural areas. Higher education is always associated with lower probability of intergenerational persistence. On the contrary lower education, providing limited options in the labour market, is associated with higher probability of intergenerational persistence. Productive asset ownership by a family is positively associated with intergenerational persistence. However, the effect is non-linear. In urban India, size of household enterprise is negatively associated with father-son pair being in same industry. For land ownership in rural India, we find that after 3.8 hectares of land holding, land ownership has negative effect on intergenerational persistence of industry. Father's network, proxied by occupational hierarchy, exerts varying effects at different level. At the top of occupational ladder, we find suggestive evidence that father's influence on hiring process affects son's sector of employment. However, even at relatively lower occupation level we find that job related information transmission from father to son affects intergenerational persistence.

Rest of the paper is organised as follows. In the next section, we introduce the data used in the subsequent analysis. Section 3 presents the simulation results from counterfactual population. In Section 4, we use an econometric model to estimate the effect of education and other family background factors. Section 5 concludes the paper.

2. Data

We use data from the 66th round survey on employment and unemployment in India carried out by the National Sample Survey Office (NSSO) during the period July 2009 – June 2010. The survey collects data from a nationally representative sample of households on the subject of employment and unemployment of household members.

We focus on the employment of 16-30 years old male and their fathers. In the data set the industry of employment (5 digit NIC) is recorded for 20,623 father-son pairs. Our analysis is based on this subset of the male individuals in the 16-30 years age group. Using broad industrial classification (16 industries) we find that 61.54% of the male individuals work in industry where their fathers are also employed. Using 5-digit industrial classification we find that 56.76% sons are employed in the same industry where their fathers are employed. We will use the broad industrial classification (17 industries) in the analysis of intergenerational persistence for the sake of computational ease in the simulation and clarity in the presentation of the results.

Among these individuals 12.96% belong to Scheduled tribes (ST), 17.38% Scheduled castes (SC), 39.45% Other backward castes (OBC) and 30.2% General castes (GEN). There are 74.7% Hindus, 15.43% Muslims, 5.5% Christians, and 4.32% of other religions. The sample consists of individuals from 609 districts in 28 states and 7 union territories of India.

Table 1: Persistence of industry of employment across generations, proportion of father-son pairs.

	Full sample	Caste				Religion			
		GEN	OBC	SC	ST	Hindu	Muslim	Christian	Others
All	0.62	0.61	0.63	0.57	0.66	0.62	0.60	0.56	0.68
Age									
16-20 years	0.66	0.66	0.68	0.60	0.73	0.67	0.64	0.66	0.72
21-25 years	0.60	0.58	0.62	0.55	0.63	0.60	0.58	0.51	0.65
26-30 years	0.59	0.61	0.60	0.53	0.61	0.60	0.58	0.51	0.67
Education									
No formal education	0.73	0.65	0.72	0.74	0.82	0.75	0.65	0.65	0.83
Primary education	0.66	0.65	0.68	0.61	0.73	0.67	0.64	0.64	0.74
Secondary education	0.63	0.63	0.64	0.55	0.66	0.63	0.60	0.59	0.68
Higher secondary education	0.58	0.62	0.60	0.44	0.53	0.58	0.57	0.47	0.64
More than higher secondary education	0.44	0.48	0.43	0.30	0.33	0.45	0.43	0.31	0.47
Rural	0.64	0.61	0.65	0.60	0.68	0.65	0.58	0.58	0.71
Urban	0.57	0.60	0.58	0.49	0.53	0.55	0.63	0.51	0.60

Table 1 gives the incidence of intergenerational persistence of industry of employment for different age groups, educational levels and place of residence (urban or rural) of son. It also provides the cross tabulation for different social groups (caste and religion).

The first row of number in Table 1 shows that the overall incidence of intergenerational persistence is 62%. The incidence for General Caste (GEN), Other Backward Castes (OBC), Hindus and Muslims are in line with the incidence in full sample. However, the incidence of

intergenerational persistence is relatively low for Scheduled Caste (SC) and Christians and relatively high for Scheduled Tribe (ST) and other religions. This pattern is also evident for the incidence of intergenerational persistence of industry of employment across different age groups of sons. Except for General caste and other religions the intergeneration persistence is decreasing in the age of son. For these two social groups the lowest incidence is observed for the 21-25 years age group.

Looking at the block of numbers for different educational levels we find that higher the level of education of sons lower is the probability that he works in the industry where his father works. For the full sample the incidence of persistence reduces from 73% for sons with no formal education to 44% for sons with more than higher secondary education. The persistence is as high as 82% for ST and 83% for other religions with no formal education. Among individuals with more than higher secondary education, we observe very low incidence of persistence for SC (30%) and Christians (31%). Individuals in rural areas are more likely to work in the industry where their fathers work except for Muslims who are more likely to work in the same industry as fathers if they live in urban areas.

To sum up the finding from the descriptive statistics, we find that the incidence of intergenerational persistence of industry of employment is high among individuals from younger age group, low educational levels and rural areas.

3. Counterfactual population and intergenerational persistence

With the background of high persistence of industry of employment across generations, it's natural to ask how father's industry of employment is transmitted to son. The theoretical literature points to several hypotheses. The labour market may be segmented between rural and urban areas or formal and informal sectors. In a segmented labour market, lack of diversity in employment opportunities may push the son to father's industry of employment. In the extreme, one can think of single-industry districts with no labour mobility between them. In this case it is very likely that son will work in the same industry as his father. Nepotism, contacts and firm specific skill may play important roles in the intergenerational persistence of industry of employment. A part of the persistence can reflect the fact that even if sons were randomly allocated to industries, a fraction of them will find job in the industry where their fathers work, without there being any causal link.

We create a number of counterfactual populations to estimate the part of observed persistence that can be attributed to mechanism of random allocation in the labour market. The simulation to construct the counterfactual population works as follows. All young individuals are randomly allocated to different industries. Allocation is done without replacement so as to keep the industry level distribution of employment in simulated population same as the observed distribution. The proportion of son-father pairs in same industry gives the measure of intergeneration persistence in the setting of randomised allocation. After 1000 such replications average value of the proportions is calculated to compare with the observed persistence.

Table 2 reports the results from simulation of different counterfactual populations. In the first column the mean incidence of same industry employment of father-son pairs is presented to facilitate comparison with the simulation results.

Table 2: Incidence of intergeneration persistence – proportion of father-son pairs in same industry from different randomly assigned populations.

Observed	**1**. Full random assignment	**2**. Within educational categories	**3**. Within urban/rural areas	**4**. Within district	**5**. Urban/rural areas and educational categories	**6**. District and urban/rural areas	**7**. District and educational categories	**8**. District, urban/rural areas and educational categories
0.615	0.210	0.223	0.260	0.286	0.271	0.357	0.388	0.489

The first simulation, termed "Full random assignment", randomly assigns sons to different industries keeping the distribution of jobs across industries fixed. The number in that column shows that with full random allocation of young individuals in different industries lead to 21% father-son pairs being in same industry. The number implies that random assignment can explain only one third of the observed intergenerational persistence. The second simulation limits the randomisation within educational categories. This conditional randomisation uses five educational categories – no formal education, primary education, secondary education, higher secondary education and college education or above. The numbers in the third column shows that the randomisation within educational categories leads to a small increase in intergenerational persistence in the simulated populations. The randomisation conditional on educational categories still explains less than 40% of the observed intergenerational persistence. The third simulation is conditional on the urban-rural divide in labour market. It keeps the distribution of jobs across industries in urban and rural areas fixed. We observe that the incidence of intergenerational persistence stands at 26% (compared to 21% with full randomisation). This randomisation within urban and rural areas explains more than 40% of the observed intergenerational persistence. The fourth simulation does the randomisation within cells defined by districts. This involves randomised assignment of sons to different industries within each of 609 districts. The incidence of intergenerational persistence of industry employment rise to 29% (compared to 21% with full randomisation). Comparison of full randomisation with other three conditional randomisation indicates that district level economy, in particular diversity of jobs in different industries in a district, has greater explanatory power in explaining the observed intergenerational persistence of industry employment than education and urban-rural divide.

In next three simulations we incorporate two limiting conditions to construct cells within which sons are randomly assigned to different industries. The fifth simulation constructs the cells within urban/rural areas and education categories. We observe an increase in the incidence of intergeneration persistence, as compared to full randomisation, randomisation within urban/rural areas and educational categories alone. However, the strength of these two

conditions together in explaining the observed persistence is still less than that of district alone. The sixth simulation incorporates both district and urban/rural areas in constructing the cell within which random assignment occurs. We observe a major increase in the incidence of intergenerational persistence, compared to full randomisation and others (simulations 1- 5). These two constraints – district and urban/rural divide – explain more than 50% of the observed intergenerational persistence. In the seventh simulation we construct the cell on the basis of district and educational categories. The incidence of persistence further increases. It is important to note that the incidence of persistence from randomisation within district and educational categories is higher than that from randomisation within district and urban/rural areas. In the last simulation we randomise within cells constructed on the basis of district, urban/rural areas and educational categories. We observe a drastic increase in the incidence of persistence. The incidence of intergenerational persistence stands at 49%, only 13% point less than the observed incidence of intergenerational persistence of industry employment. This randomisation explains more than three-fourth of the observed persistence.

Our simulation results show that much of the incidence of intergenerational persistence of industry employment may be due to preference for geographical location (district and urban/rural areas) and level of education. It may equally be due to lack of opportunities because of geographical locations and education level. Though randomisation with three criteria gives a higher incidence of persistence compared to randomisation with each of them alone, a substantial part of the observed persistence remains unexplained. The residual of the magnitude of 21% of the observed incidence of persistence for full sample indicates that there must be other factors that determine the observed pattern of intergenerational persistence of industry employment. In the next section we attempt to explain the persistence using an econometric model.

4. Role of education and family background

In this section we examine the role of education and a set of factors associated with family background in the intergeneration persistence of industry. We use a probit model to examine the effect of these factors on the probability that father and son are employed in the same industry. The dependent variable takes value 1 if father and son work in same industry, 0 otherwise.

As discussed above, designing effective public policy to equalise opportunities in a society requires identifying and measuring major sources of persistence. Education is an important factor determining labour market outcomes. Parental investment on children's education plays a key role in intergenerational mobility across industries. Individuals with higher level of general education are more likely to have employment opportunities in a number of industries. This reduces the chance that the individual will be employed in the industry where his father is also employed. On the other hand, if father invests in industry specific skill for his son, the son is likely to be employed in the industry where this specific skill is in demand. The intergenerational persistence in this case will depend on whether the skill is specific to

the industry where the father is employed. Other possibility is that father does not invest much on children's education. In this case, son's labour market options are limited. He will be more likely to be employed in the industry where his father works for a couple of reasons – (i) his father also had low level of education, and limited labour market options, and (ii) he relied on father's network for employment and father as a network channel affects the chance that his son finds job in the same industry. The role of family background is equally important for the labour market choice of younger generation. Family with higher income will be less constrained to invest in children's education. Higher income also allows parents to incur supplementary expenditure to augment quality of education. Often components of permanent income of a household are not available in survey data from developing countries. Parental education is used a proxy for permanent income of a household. It also stands as a control for the innate ability of children that is transmitted from the older generation. Other family background variables include asset ownership. In rural areas, ownership of cultivable land may affect the intergenerational persistence. Similarly, ownership of family enterprise may reduce the incentive of younger generation to look for outside employment options, which may affect the decision to invest in education ex ante. As mentioned earlier the father can be an important network channel for job related information affecting son's choice of industry. Father's occupation status would be an important determinant of the effectiveness of this network. Father who works in a higher position in the occupational ladder in a industry will have greater network influence to affect his son's employment probability in that industry.

The objective is to study whether the labour market is a level playing field for young generation or it is akin to a relay race where parents hand off the baton to their children. If family background factors appear more important than education in explaining intergenerational persistence, we have convincing evidence that the labour market is not a level playing field for younger generation.

In the estimation of the probit model of intergenerational persistence of industry we incorporate variables for the factors discussed above. Given the importance of district level economy for employment in different industries and hence for the intergenerational persistence[4], we include district fixed effects in all specifications.

The estimation results are presented in Table 3. In our first estimation we incorporate only the individual characteristics of the younger generation as explanatory variables. This set of explanatory variables includes age and education level of son. We also have dummies for caste and religion of a household. For each specification we estimate the model using two samples – urban sample and rural sample. The first column gives the estimates from the base specification with urban sample. The estimates show that age does not have significant effect on intergenerational persistence of industry of employment, so is primary level of education. More than primary education of son has expected sign and is associated with lower chance of being employed in the same industry with his father. This negative effect gets stronger with increase in the level of education of son. In terms of marginal effects, son's secondary

[4] Emran and Shilpi (2012) also emphasis the role of geographical location on intergenerational mobility.

education reduces his chance of being employed in father's sector employed by 12%. But, if he has college or university education, his chance of being in the same sector with his father reduces by 34%. We also observe that intergenerational persistence is higher among upper caste individuals compared to individuals from scheduled caste, schedules tribe and other backward castes. The estimates show that Muslims are more likely and Christians less likely to work in father's industry of employment than the Hindus. Intergenerational persistence appears to be higher also among individuals from other religions (Buddhism, Jainism, etc.) [5]. The second set of results corresponds to the estimation of same specification with rural sample. Primary education is only marginally significant. In rural areas secondary education for son reduces his chance of being employed in the father's industry of employment by 9% and college or university education reduces the chance by 46%. An interesting difference with full sample results is that in rural areas intergeneration persistence of industry is lower among both Muslims and Christians than Hindus. In addition to general education, the data provide information about whether an individual has any technical education. Only 3% sons possess technical education. When we include a dummy variable for technical education of son, we find that its coefficient is negative and highly significant in both the samples. It appears that this finding is driven by the fact that technical education reduces the probability that an individual is employed in agriculture.

In the next set of estimations we introduce variables related to parent's education. The specifications also include a dummy variable for same level of education of father and mother. There is indication that father's education is negatively and mother's education is positively associated with the probability that son works in the industry where his father also works. However, there is considerable variation across rural and urban areas. In urban areas, only college or university level of education of father has negative and significant effect on intergenerational persistence. Secondary level of education of mother is associated with higher intergenerational persistence. In rural areas, if father has secondary or higher education son is less likely to work in his sector. Only primary level of education of mother is associated with higher probability of intergenerational persistence. In all samples, the dummy variable for same level of education of both parents is positive and significant. This is consistent with the finding of Dahan and Gaviria (2001) that assortative mating in the marriage market can affect intergenerational persistence through inheritance of misfortune or consumption of fortune. Our data show that when father does not have any formal education, in 94% cases mother is also without any formal education. On the other hand, when mother has college or university education, in 75% cases father also has college or university education. The estimation result suggests that low rates of assortative mating can in fact increase social mobility by reshuffling the fortune one inherits at birth.

[5] In a separate specification, we also included marital status as an explanatory variable. It didn't appear significant.

Table 3: Estimation results from probit model of intergenerational persistence of industry

Variable	(1)						(2)						(3)						(4)					
	Urban			Rural			Urban			Rural			Urban			Rural			Urban			Rural		
	coefficient		S. E.	coefficient		S. E.	coefficient		S. E.	coefficient		S. E.	coefficient		S. E.	coefficient		S. E.	coefficient		S. E.	coefficient		S. E.
Age	0.001		0.005	-0.006	*	0.003	0.001		0.005	-0.005		0.003	-0.001		0.005	-0.011	***	0.003	-0.001		0.005	-0.008	**	0.003
Eductaion																								
Primary eductaion	-0.069		0.082	-0.090	*	0.050	-0.060		0.087	-0.055		0.052	-0.063		0.087	-0.075		0.053	-0.055		0.088	-0.064		0.053
Secondray education	-0.176	**	0.076	-0.169	***	0.047	-0.198	**	0.083	-0.084	*	0.050	-0.230	***	0.084	-0.126	**	0.051	-0.225	***	0.084	-0.096	*	0.051
Higher secodary education	-0.242	***	0.088	-0.350	***	0.056	-0.286	***	0.097	-0.201	***	0.060	-0.344	***	0.098	-0.281	***	0.062	-0.301	***	0.099	-0.214	***	0.062
More than higher secondary education	-0.507	***	0.086	-0.807	***	0.060	-0.467	***	0.098	-0.592	***	0.066	-0.515	***	0.099	-0.708	***	0.068	-0.514	***	0.100	-0.598	***	0.068
Father's eductaion																								
Primary eductaion							0.049		0.064	0.026		0.045	0.072		0.065	0.019		0.046	0.024		0.066	0.050		0.046
Secondray education							0.035		0.070	-0.192	***	0.052	0.081		0.071	-0.222	***	0.053	0.036		0.072	-0.091	*	0.054
Higher secodary education							-0.062		0.103	-0.486	***	0.083	-0.018		0.105	-0.499	***	0.085	-0.075		0.107	-0.201	**	0.088
More than higher secondary education							-0.272	**	0.107	-0.485	***	0.092	-0.107		0.109	-0.524	***	0.094	-0.199	*	0.112	-0.064		0.100
Mother's education																								
Primary eductaion							0.055		0.054	0.167	***	0.037	0.043		0.055	0.143	***	0.037	0.065		0.055	0.192	***	0.038
Secondray education							0.210	***	0.062	0.052		0.052	0.158	**	0.064	0.015		0.053	0.210	***	0.064	0.081		0.054
Higher secodary education							0.139		0.134	0.211		0.167	0.088		0.137	0.141		0.170	0.247	*	0.140	0.327	*	0.177
More than higher secondary education							0.002		0.135	-0.162		0.251	-0.055		0.139	-0.187		0.250	0.018		0.141	-0.130		0.260
Father and mother have same eductaion							0.093	*	0.049	0.115	***	0.039	0.110	**	0.050	0.130	***	0.040	0.082	*	0.050	0.109	***	0.040
Father self-employed													0.631	***	0.040									
Land owned (log, in hectare)																0.176	***	0.012						
Land owned squared																-0.006	***	0.001						
Father's occupation																								
Legislators, senior officials and managers																			0.663	***	0.071	0.023		0.061
Professionals																			0.316	***	0.099	-0.413	***	0.087
Technicians and associate professionals																			-0.588	***	0.120	-1.201	***	0.107
Clerks																			-0.918	***	0.139	-1.408	***	0.138
Service workers and shop and market sales workers																			0.277	***	0.066	-0.393	***	0.054
Skilled agricultural and fishery workers																			0.138	*	0.076	0.253	***	0.035
Crafts and related trades workers																			0.333	***	0.063	-0.005		0.048
Plant and machine operators and assemblers																			-0.232	***	0.085	-0.646	***	0.082
Caste																								
Other Banckward Castes (OBC)	-0.181	***	0.048	-0.033		0.035	-0.178	***	0.050	-0.055		0.036	-0.163	***	0.051	-0.024		0.037	-0.141	***	0.052	-0.013		0.037
Scheduled Caste (SC)	-0.405	***	0.059	-0.264	***	0.040	-0.407	***	0.064	-0.296	***	0.042	-0.262	***	0.066	-0.193	***	0.043	-0.292	***	0.066	-0.200	***	0.044
Scheduled Tribe (ST)	-0.270	**	0.119	0.015		0.054	-0.279	**	0.123	0.001		0.056	-0.152		0.126	0.015		0.058	-0.158		0.125	0.027		0.058
Religion																								
Muslim	0.243	***	0.057	-0.279	***	0.046	0.258	***	0.059	-0.313	***	0.047	0.220	***	0.060	-0.271	***	0.048	0.226	***	0.061	-0.249	***	0.048
Christian	-0.342	**	0.146	-0.191	*	0.099	-0.328	**	0.158	-0.206	**	0.102	-0.203		0.162	-0.160		0.105	-0.274	*	0.163	-0.188	*	0.104
Other religions	0.313	***	0.102	0.115		0.088	0.311	***	0.104	0.094		0.092	0.256	**	0.106	0.102		0.094	0.309	***	0.107	0.068		0.093
Constant	0.743	*	0.395	1.004	***	0.278	0.675		0.413	0.890	***	0.283	0.541		0.425	0.993	***	0.285	1.004	**	0.453	1.014	***	0.293
Log likelihood	-3735.363			-7975.665			-3532.283			-7553.066			-3405.166			-7254.456			-3374.470			-7196.312		
Number of observations	6143			13814			5842			13200			5842			12968			5829			13128		

Note: *All specifications include district fixed effects.*

, **, * stand for significance at 10%, 5% and 1% respectively*

In the next set of estimations we introduce variables for the ownership of productive assets. On one hand, household ownership of productive asset can create an incentive for employment in household enterprise if the expected return from outside option is lower than the return from employment in household enterprise. This will be the case when younger generation inherits asset specific skill from the previous generation so that the value of that skill is higher within household than in market. This will also be case when limited option in a tight labour market forces some individuals to resort to household assets for subsistence employment. On the other hand, the technology of a household enterprise may impose a limit on the productive employment. A household enterprise with a size already close to that limit may create an incentive for younger generation to find external employment. In this case the household assets and the return from them are likely to affects credit constraint and investment in human capital formation of younger generation.

For the urban sample we introduce a dummy variable for presence of household enterprise. The estimation result shows that presence of household enterprise actually increases the probability that father and son are employed in the same industry. In terms of marginal effect, we find that ownership of household enterprise increases the probability of father-son same industry employment by 59%. In a separate estimation, although with a limited number of observations, we find that smaller household enterprises (less than six employees) are associated with higher probability of intergenerational persistence. Presence of larger household enterprise is associated with lower intergenerational persistence.

For the rural sample, we use land ownership (in hectare) for household productive assets. We find that land ownership is positively associated with intergenerational persistence. However, the effect is non-linear (with quadratic term negative and significant). The results suggest that moderate level of land ownership creates incentive for younger generation to be employed in their father's industry (predominantly agriculture). But the positive effect on intergenerational persistence decreases as the amount of land increases. In fact, at the higher end (more than 3.8 hectares) land has negative effect on intergenerational persistence. We also do a robustness check with two other indicators of land holding of a household. Using land possessed and land cultivated by a household in the estimation we find similar results – positive but decreasing effect of land on intergenerational persistence.

In our last set of estimations we try to shed light on the network effect on intergenerational persistence. It is important to emphasize the relevance of network effect for policy design. If access to job is determined by informal network or nepotism, intervention at early age will not be effective in promoting equal opportunity in labour market. Father can affect the job access of his son by providing vital connection to an informational network. His role will be much more pronounced for intergenerational persistence if he has influence in the hiring process of the firm where he is employed. In this case intergenerational transmission of industry is mediated by intergenerational transmission of employer. Corak and Piraino (2011) use the number of firms with which father has had worked and the strong relationship between parental income and self-employment as indicators of informational network and influence on hiring process, respectively. Our data set do not provide information on the number of employers with which father has had worked. We rather use father's occupational

category as proxy for network reach. We argue that father working at the top of occupational ladder will be more effective as network connection and have higher influence on hiring process in a firm than a father working in elementary occupation. However, it is important to recognise that the relationship between occupational hierarchy and intergeneration persistence may not be monotonic in India. A large part of production in some sectors (particularly in manufacturing and construction) involves informal employment of low or semi-skilled workers. Employers in these informal sectors rely on their employees to hire new recruits. Conceptually, employers tend to mitigate informational asymmetry by hiring through present employees. And employees, for reason of reputation, refer high ability candidates as potential employee. This has obvious implication for intergenerational persistence of industry. If father is employed in such an occupation, his son is also likely to have access to job with the same employer.

In our estimation model, we incorporate eight dummy variables for nine occupational categories. The occupational categories are – 1. Legislators, senior officials and managers, 2. Professionals, 3. Technicians and associate professionals, 4. Clerks, 5. Service workers and shop and market sales workers, 6. Skilled agricultural and fishery workers, 7. Crafts and related trades workers, 8. Plant and machine operators and assemblers, and 9. Elementary occupations. We use dummy for first eight occupational groups in our estimation. Estimation results from the urban sample shows that father being in first two occupation categories (Lagislator, senior officials and manager, and Professionals) is associated with higher probability of intergenerational persistence. This may reflect the influence of father in the hiring process of the firm where he works or in other firms in the same industry. This may also reflect the effect of parental investment in son's industry specific skills. In our data we are not able to distinguish between these two channels. When father's occupation is in the groups "Technicians and associate professionals" and "Clerks", intergenerational persistence is low. These two groups include occupations which give limited opportunity for network influence and nepotism as selection to this kind of jobs involves formal recruitment and highly competitive selection process. The next three groups of occupations (5. Service workers and shop and market sales workers, 6. Skilled agricultural and fishery workers, 7. Crafts and related trades workers) give ample scope for network based recruitment because of informal nature of production and services in some industries. These are also the occupational groups where labour supply outweighs labour demand by a significant margin, making formal selection process too costly for an employer. Finally, we find that if father is in a technical occupation (Plant and machine operators and assemblers), son is less likely to be employed in his sector of employment. This is the other side of our earlier finding that son's technical education reduces the probability of intergenerational persistence. It seems that if one of the father-son pair has technical skills, the probability of intergenerational persistence is low.

For rural India we observe a different pattern. Most of the occupations are associated with lower probability of intergenerational persistence, compared to the omitted group "Elementary occupations". The only exception is "Skilled agricultural and fishery workers". It appears that in rural India, father being in elementary occupation is associated with higher

probability of intergenerational persistence. It is important to note that after controlling for father's occupation some of the coefficients associated with father's education loose significance in rural areas.

In all specifications, individuals from scheduled caste are consistently less likely to work in industries where their fathers work. Muslims in urban (rural) areas are more (less) likely to be in father sectors of employment, compared to Hindus.

5. Conclusion

This paper studies the intergenerational persistence of industry in India. We suggest that rising inequality in a period of economic growth may be due to high intergenerational persistence in labour market. Instead of focusing only on the disparity among social groups, we attempt to spell out the origin of intergenerational persistence. Using a set of simulation with counterfactual population we find that some systematic factors rather than random matching in labour marker plays important role in intergenerational persistence of industry in India.

Educational attainment is found to be an important factor determining intergenerational mobility across industries. However, it has a defining role only when an individual has some college or university education. Ownership of productive assets, at the bottom end of asset distribution, has positive effect on intergenerational persistence. The non-linear effect of asset ownership suggests the easing of credit constraints that affect investment in younger generation's human capital accumulation and mobility across industries. Father's network, again appears, important in determining son's sector employment. Father's occupational status that allows him to influence the hiring process or to access job related information positively affects intergenerational persistence of industry. In these cases the transmission of industry from older generation to younger generation is mediated through the transmission of employer.

The paper uses cross-section data to study an issue that requires information from two generations, hence is not immune to biases induced by transitory states in labour market. However, in absence of longitudinal data for India the paper nevertheless shed light on different mechanisms that give rise to persistence in labour market. From policy perspective the findings are important. The significant role of family background in intergenerational persistence suggests that a policy of redistribution from rich to poor will not be effective to ensure equality of opportunities. A policy of equal access to education will be able to ensure fairness in labour market. However, our results suggest that focusing on early years of human capital formation is only a part of the means to ensure equality of opportunity in labour market. Higher education needs to be given equal emphasis in a policy to ensure social justice in India.

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